

# Spiegelian Hernia Secondary to Abdominoplasty

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**Key Words:** Hernia, Spiegel's Linea Semilunaris Plication, Abdominoplasty

## Abstract

After analyzing 690 hernioplasties performed during the period between 1960 and 1994, the authors found three cases of Spiegel's hernia, all diagnosed in patients that had undergone prior abdominoplasty.

They suggest that plication of Spiegel's "linea semilunaris" associated with classical abdominoplasty may contribute to the prevention of Spiegelian Hernia, since this plication reinforces a weak point in the anterolateral abdominal wall.

## Introduction

Spiegel's hernia can be found under the name Spiegel,

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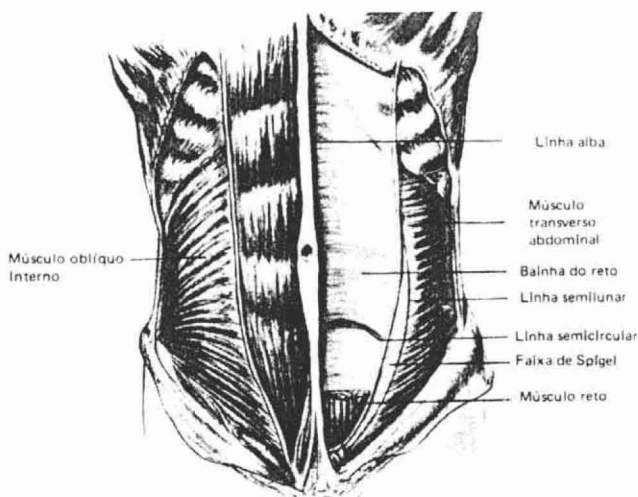
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Spigel, Spigelius, Hernia of the semilunar line or Spontaneous Ventrolateral Hernia of the Abdomen.

Spiegel's semilunar line was named by Adrian Van Der Spiegel between 1578-1625, at the time professor of anatomy and surgery at the University of Padua. It is defined as the transition line between the internal oblique and the transverse muscles of the abdomen, extending from the eighth or the ninth costal cartilage to the pubic tubercle forming a convex lateral curve which explains the name semilunar. The aponeurosis between the semilunar line and the lateral margin of the abdominis rectus muscle is called Spiegel's band (Fig. 1).

This hernia is characterized by the protrusion of a peritoneal sac, an organ or preperitoneal fat from its normal position through a congenital or acquired orifice in Spiegel's band. Originally describe by La Chausse, in 1746 according to Olson & colleagues<sup>6</sup>; the hernia is usually located between the muscle layers of the abdominal wall and, therefore, is called interparietal, interstitial, intramuscular or intramural. Sir Astley Cooper (1804), introduced the theory that the possible increase in diameter of neurovascular orifices in Spiegel's band might permit herniation. This hypothesis, however, was disproved after a study published by Zimmerman & colleagues<sup>11</sup>, who after 500 anatomic dissections, confirmed the rarity of blood vessels passing through the defect.

The most plausible theory concerning the origin of this hernia is based on the fact that the anterolateral wall



**Fig. 1 - Anatomy of the abdominal wall, illustrating Spiegel's line.**

**Fig. 1 - Anatomia da parede abdominal mostrando a Faixa de Spiegel.**

of the abdomen consists of two muscles on each side of the anterior portion (abdominis rectus and pyramidal) and three muscles on the anterolateral portion (external oblique, internal oblique and transverse of the abdomen). Each of these three muscles is wrapped by its fascia that unite medially to form the sheath of the abdominis rectus. Above the arched or semicircular line of Douglas, the aponeurosis of the internal oblique divides into two laminae, one together with aponeurosis of the external oblique passes over the abdominis rectus while the other lamina, together with the aponeurosis of the external oblique passes over the abdominis rectus while the other lamina, together with the aponeurosis of the transversus abdominis and the transverse fascia shape the posterior portion of the sheath of the abdominis rectus. Below the semicircular line the three aponeurosis unite, only passing anteriorly to the abdominis rectus which remains separated from the peritoneum only by the transverse fascia and loose connective tissue. They become weak or even absent at the posterior lamina of the rectus sheath and the majority of Spiegelian Hernias occurs in this weak spot<sup>7</sup>.

**Material and Methods**

The objective of this study, is to link Spiegelian Hernia to post-operative abdominoplasty patients and to recommend plication of Spiegel's line to prevent this.

Surgical cases of abdominoplasty patients on the service between 1960 to 1994, were examined and 16 cases were recorded as follows.

The three cases of Spiegelian Hernia occurred in females and add up to a percentage of 18,75%.

**Surgeries Accomplished after Abdominoplasties**

Cholecystectomies ..... 9  
 Intestinal Endometriosis ..... 1

*Hernioplasties:*

Incisional ..... 1  
 Epigastric ..... 1  
 Umbilical ..... 1  
 Spiegel's hernia ..... 3

A total of 690 hernioplasties performed during the above time period were examined. A description and photographs of a case of this hernia is presented.

Fifteen months prior to her complaints, M.G.S., a white female weighing 76 kg, underwent abdominoplasty. Two months ago she began feeling lumbar pain in the iliac fossa on the left side.

Physical examination demonstrated a globular abdomen, with signs of abdominoplasty and with diffuse protrusion in the left flank and iliac fossa, lateral to the abdominis rectus muscle. The laboratory tests, ultrasonography and computerized tomography were inconclusive. The general and plastic surgeons suspected the clinical diagnosis of Spiegelian Hernia. The diagnosis was confirmed at surgery and the hernia and the dermo-adipose deformity by it were corrected (Figs. 2-9).

**Results**

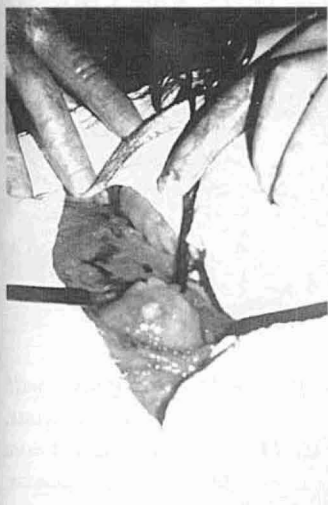
The disposable data, of the 690 hernioplasty cases, demonstrated only three Spiegel hernioplasties, which



**Fig. 2 - Profile of patient with Spiegel's hernia.**  
**Fig. 2 - Paciente com Hérnia de Spiegel, visão de perfil.**



**Fig. 3 - Front view of Spiegel's hernia.**  
**Fig. 3 - Paciente com Hérnia de Spiegel, visão de frente.**



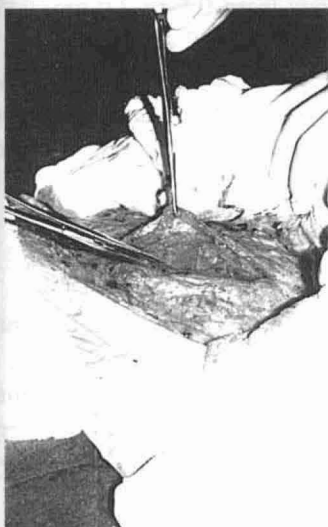
**Fig. 4 - Spiegel hernia dissected.**  
**Fig. 4 - Hérnia de Spiegel dissecada.**



**Fig. 5 - Excess peritoneum, resected.**  
**Fig. 5 - Ressecado excesso de peritônio.**



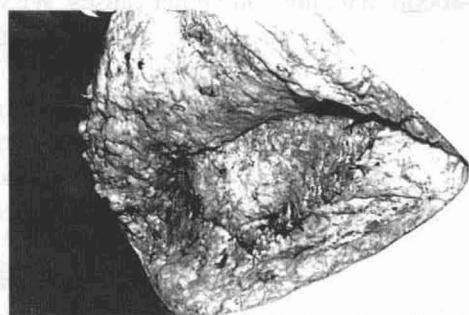
**Fig. 6 - Hernial contents isolated. Greater omentum.**  
**Fig. 6 - Conteúdo herniário isolado. Omento maior.**



**Fig. 7 - Exposure for hernioplasty.**  
**Fig. 7 - Exposição para realizar hernioplastia.**



**Fig. 8 - Hernioplasty with imbrication.**  
**Fig. 8 - Hernioplastia com jaquetão.**



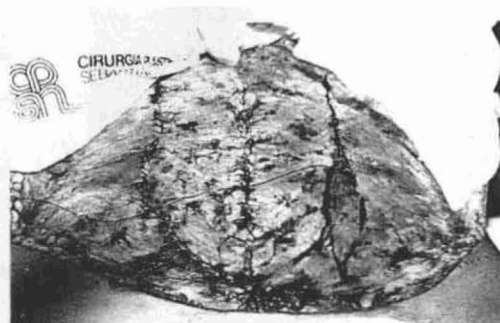
**Fig. 9 - Hernioplasty with contralateral strengthening of Spiegel's line.**  
**Fig. 9 - Hernioplastia de Spiegel realizada mais reforço contralateral da linha de Spiegel.**

coincides with the three cases accomplished after abdominoplasty. This revealed that a total of 100% of cases of Spiegel hernioplasty on the service were performed after prior abdominoplasty; leading us to correlate this result.

Prospective studies are planned on patients submitted to abdominoplasty with plication of the Spiegel semilunar line (Figs. 10, 11), together with midline plication, with the scope of verifying whether or not this hernia appears after abdominoplasty.

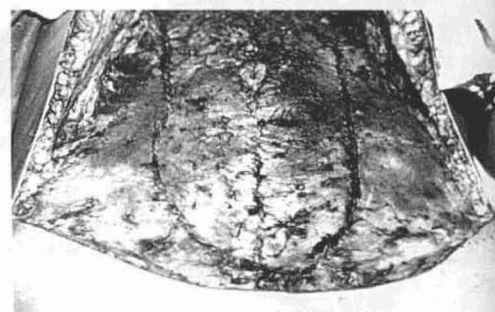
## Discussion

Although there are few articles on the subject, Spiegel's hernia is not so rare and its diagnosis is not very often made. Reported cases have almost always involved adults (however, they have already been described in children and the elderly), predominating between the fifth and sixth decades. It may present uni or bilaterally and the sex ratio is 1:1<sup>1,4, 6,10</sup>. All the patients in our series are females, perhaps because abdominoplasty is more common in this sex. No preference is apparent as to the side of the abdominal wall. However, its more obvious location is below the umbilical scar and more rarely on the cephalad portion of the abdomen<sup>9</sup>. The explanation is that in the erect position the intra-abdominal pressure is greater below the umbilical scar due to the force of gravity exerted by the organs. Responsible for the etiology of Spiegel's hernia, in addition to congenital anatomic defects are factors which increase the intra-abdominal pressure. Among these are: obesity, repeated pregnancies, ascitis, chronic cough, severe muscular effort, considerable weight loss due to dieting or disease, constipation, flatulent foods and those difficult to digest, intra-abdominal tumor and other causes. We would like to include abdominoplasty to this list as a cause of this hernia, based on our series and because of increased intra-abdominal pressure promoted by this surgery, both by the dermo-adipose resection and the conventional abdominal midline plication. The case presented, displays the typical symptoms of intermittent pain on effort, similar to neuralgia, located in Spiegel's line, and identified by the patient above it. If the patient noted local edema, previously, it may help in the diagnosis that is sometimes difficult because of the absence of pain. Symptoms may vary somewhat, depending on the contents of the hernial sac which may be omental and intestinal for the most part. Our patient presented a palpable mass in the region of Spiegel's line, which is uncommon, for the examination may be difficult because



**Fig. 10** - Abdominoplasty with plication of the midline and of Spiegel's line.

**Fig. 10** - Abdominoplastia com plicatura da linha média mais plicatura da Linha de Spiegel.



**Fig. 11** - Abdominoplasty with completed plications.

**Fig. 11** - Abdominoplastia com plicaturas completas.

the hernia is located interparietally in many cases. Valsalva maneuvers may facilitate palpation of the hernial orifice which ranges from 0.5 to 2.0 cm, with description of orifices of up to 6 or 8 cm in diameter<sup>9</sup>. Diagnosis may be simplified by contrast X-ray, ultrasonographic mapping and computerized tomography. However, as in the case presented, surgical exploration confirms the diagnosis.

## Conclusion

Because of the large increase in intra-abdominal pressure consequent to classical abdominoplasty, a hernia may originate in the Spiegel semilunar line, which usually requires surgery. Although the surgery itself is simple, it subjects the patient to an unnecessary surgery, with its added risks and expense.

In agreement with what has been presented, we recommend plication of Spiegel's semilunar line to prevent the appearance of Spiegelian Hernia, since the weak spot in the anterolateral abdominal wall is strengthened.

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